

**In the Claims:**

Claim 1. (Currently Amended) A data acquisition and display system for displaying an object in a presently viewed field before and after changes are applied to said object-, the system comprising

at least one data acquisition device, operable to acquire field data of said object in said presently viewed field having field location data, from a scannable field of interest using each of at least a first and a second data acquisition process, said changes being applied to said object between said first and said second data acquisition processes, said field location data being comprising location data intrinsic to said ~~field data~~object, thereby such as to provide field location data that is constant for said first and said second data acquisition processes over said changes,

a field data storage device for storing said field data together with field location data corresponding thereto, and

a field data display device being operable to display simultaneously field data of said presently viewed field, acquired respectively by said first and said second data acquisition process, said field data being matchable by said intrinsic field location data.

Claim 2. (Previously Presented). A data acquisition and display system according to claim 1, wherein said field data is image data.

Claim 3. (Previously Presented). A data acquisition and display system according to claim 1, wherein said scannable field of interest is substantially larger than said presently viewed field such that a plurality of viewed fields are required to cover said scannable field of interest.

Claim 4. (Previously Presented). A data acquisition and display system according to claim 2, wherein said scannable field of interest is substantially larger than said presently viewed field such that a plurality of viewed fields are required to cover said scannable field of interest.

Claim 5. (Previously Presented). A data acquisition and display system according to claim 4, wherein said field data storage device is operable to store image data of an entirety of said scannable field of interest acquired according to said first data acquisition process.

Claim 6. (Previously Presented). A data acquisition and display system according to claim 5, wherein said data acquisition device is operable to acquire image data of a presently viewed field of view using said second data acquisition process and said field data display device is operable to display said image data in conjunction with a corresponding image acquired using said first data acquisition process.

Claim 7. (Previously Presented). A data acquisition and display system according to claim 1, wherein said data acquisition device is a microscope.

Claim 8. (Previously Presented). A data acquisition and display system according to claim 7, wherein said data acquisition device is a microscope and wherein said microscope is any one of a group comprising a light microscope, a scanning electron microscope and a transmission electron microscope.

Claims 9. – 14. (Canceled)

Claim 15. (Currently Amended) An acquisition and display co-ordinator for co-ordinating between at least one image data acquisition device, operable for acquiring image data according to at least two data acquisition processes respectively before and after carrying out a change on an object being imaged, and a data display device, said co-ordinator being operable to store image data obtained using a first data acquisition process together with location data of an image within a scannable field of interest, said location data ~~being~~ comprising location data that is ~~constant~~ relative to an object in ~~to~~ said image data such as to apply both before and after said ~~changes~~ change, and to display said image simultaneously with an image formed with a second of said data acquisition process, using said constant location data to co-ordinate between said images, said first and second data acquisition processes being respectively different illumination type, illumination path, marking and data gathering combinations, and said change being related to preparations for respective ones of said processes.

Claim 16. (Original) An acquisition and display co-ordinator according to claim 15, wherein said scannable field of interest is substantially larger than a presently viewed field such that a plurality of viewed fields are required to cover said scannable field of interest.

Claim 17. (Currently Amended). An acquisition and display co-ordinator according to claim 16, operable to store image data of an entirety of said scannable field of interest acquired according to said first data acquisition process.

Claim 18. (Previously Presented). An acquisition and display co-ordinator according to claim 17, wherein said data acquisition device is operable to acquire image data of a presently viewed field of view using said second data acquisition process and said data display device is operable to display said image data in real time in conjunction with a corresponding image acquired using said first data acquisition process.

Claim 19. (Original) An acquisition and display co-ordinator according to claim 15, wherein said data acquisition device is a microscope.

Claim 20. (Original) An acquisition and display co-ordinator according to claim 19, wherein said microscope is any one of a group comprising a light microscope, a scanning electron microscope and a transmission electron microscope.

Claims 21. – 25. (Canceled)

Claim 26. (Original) An acquisition and display co-ordinator according to claim 15, which is operable to position said data acquisition device.

Claim 27. (Original) An acquisition and display co-ordinator according to claim 15, which is operable to monitor positioning of said data acquisition device.

Claim 28. (Original) An acquisition and display co-ordinator according to claim 15, wherein said location data additionally comprises focussing data for defining a focal plane.

Claim 29. (Original) An acquisition and display co-ordinator according to claim 15, comprising software on computer readable media for installation on a computer operatively associated with said data acquisition device.

Claim 30. (Currently amended) An acquisition and display co-ordinating method comprising the steps of:

acquiring first data of a field of view within a field of interest being scanned using a first data acquisition process,

obtaining field location data intrinsic to said first data,

storing said data together with said intrinsic field location data of said field of view within said field of interest being scanned,

subsequently acquiring second data of a corresponding field of view within said field of interest being scanned using a second data acquisition ~~method~~ process,  
and

retrieving said first data using said intrinsic field location data and simultaneously displaying said first data and said second data, said intrinsic field location data comprising at least one feature of a sample within said field of view, said at least one feature being selected such as thereby to remain constant following follow changes applied to ~~an object~~ said sample being viewed within said field of view.

Claim 31. (Original)An acquisition and display co-ordinating method according to claim 30, wherein said first data and said second data are first and second images respectively.

Claim 32. (Previously Presented).An acquisition and display co-ordinating method according to claim 31, wherein said first and second images, being simultaneously displayed, are superimposed one on the other.

Claim 33. (Previously Presented).An acquisition and display co-ordinating method according to claim 31, wherein said first and second images, being simultaneously displayed, are displayed side by side.

Claim 34. (Canceled)

Claim 35. (Currently Amended) An acquisition and display co-ordinating method according to claim 30, wherein at least one of said image-gathering data acquisition processes is carried out using a microscope and wherein said microscope is any one of a group comprising a light microscope, a scanning electron microscope and a transmission electron microscope.

Claims 36. and 37. (Canceled)

Claim 38. (Currently Amended)A method of display of data acquired in at least two data acquisition processes from a scannable field of interest, wherein an

object in said scannable field of interest ~~may-is~~ liable to change between said scans, comprising:

- scanning the field of interest using a first data acquisition process,
- forming a plurality of first images of said field of interest,
- indexing said images using location information intrinsic to each respective image, and comprising at least one imaged feature of a sample being imaged, such as ~~thereby to remain valid~~ follow said image over said change,
- storing said indexed images,
- scanning the field of interest using a second data acquisition process to form at least one second image corresponding to one of said first images,
- indexing said at least one second image using said intrinsic location information,
- determining from the indices which of said first images corresponds to said second image,
- simultaneously displaying said second image and ~~said a~~ respective corresponding first image.

Claim 39. (Currently Amended) A method of display of data acquired in at least two data acquisition processes from a scannable field of interest, wherein changes to said scannable field of interest are applied between said data acquisition processes, the method comprising:

- scanning the field of interest using a first data acquisition process,
- forming a plurality of first images of said field of interest,
- indexing said images using location information intrinsic to an object being sampled in said scannable field,

storing said indexed images,  
 scanning the field of interest using a second data acquisition process to form  
 at least one second image corresponding to an index of a predetermined one of said  
 first images, and  
 simultaneously displaying said second image and ~~said a~~ respective  
 corresponding first image.

Claim 40. (Currently Amended) A method of constructing an image gathering  
 and display co-ordination system, the method comprising,

providing an image gathering device operable to gather image data, using a  
 plurality of image gathering processes, according to externally provided positioning  
 commands, and further operable to cross reference said positioning commands to  
 location data intrinsic to an object being sampled in said image data,

providing an image storing device and connecting said image storing device  
 to said image gathering device such that said image storing device is able to store data  
 gathered from said image gathering device in association with said externally  
 provided positioning commands and said intrinsic location data cross-referenced  
 thereto and corresponding to said data, and

providing an image display device for simultaneously displaying a plurality  
 of images gathered using different image gathering processes but with identical cross-  
 referencing between said positioning commands and intrinsic location data.

Claim 41. (Currently Amended) A method according to claim 40, wherein  
 said image display device is associated with a storage device and is operable to



display at least one image from said storage device together with one image direct from said image gathering device.

Claim 42. (Currently Amended) A control system for controlling an image data acquisition device, operable for acquiring image data according to at least first and second data acquisition processes from a slide to which changes are applied between said data acquisition processes, and a data display device, said control system being operable to store image data obtained using said first data acquisition process together with location data, said location data comprising location of at least one feature intrinsic to an object being sampled and located on said slide ~~and independent of said changes, of said image data within a scannable field of interest,~~ and to display an image corresponding to said image data simultaneously with ~~an~~ a further image having said intrinsic location data, said further image acquired using said second data acquisition process.

Claim 43. (Currently Amended) A control system for controlling an imaging device and a display device together to permit a user to move over a field of interest with said imaging device to image a sampled object within the field in parts using one imaging process, to index each part with a current location of said imaging device and location data using a feature intrinsic to said sampled object ~~said image~~, and to display a current part on said display device whilst simultaneously and automatically displaying a second image of a same part of the field previously obtained using a different imaging process and indexed using a then current location of said imaging device and said intrinsic location data, the second image being automatically replaced as the imaging device moves to a different part of the field of interest using a

respective index, said intrinsic location data being applicable to said object in both images even if changes have been made to ~~an imaged~~said sampeld object in the meantime.

Claim 44. (Original) A control system according to claim 43, wherein said imaging device is operable to image said field of interest using at least three imaging processes and wherein said display device is operable to display simultaneously all images of a part of said field of interest currently being viewed.

Claim 45. (Currently Amended) A data acquisition and display system comprising

at least one data acquisition device, operable to scan a field of interest and acquire field data of parts having field location data, said field location data being intrinsic to said field data, from said ~~seannable~~ field of interest using each of at least a first and a second data acquisition process, said field location data comprising at least one image location marker being an imaged feature of a sample being imaged,

a field data storage device for storing said field data together with corresponding intrinsic field location data, and

a field data display device being operable to display simultaneously field data, acquired respectively by said first and said second data acquisition process, said field data being matchable by said intrinsic field location data.

Claim 46. (Currently Amended) A method of applying an intrinsic co-ordinate system to a mount-and-object system to provide co-ordinated viewing of

points on a mounted object imaged using different image gathering processes, the method comprising:

- identifying a plurality of edge points of said mounted object in said mount and object system using automatic image processing,
- interpolating straight lines between said edge points,
- identifying two perpendicular straight lines from said interpolated straight lines,
- identifying a meeting point between said perpendicular straight lines,
- defining said meeting point as an origin for said intrinsic co-ordinate system,
- identifying a marker from a sample being imaged,
- using said marker as a fine-tuning reference relative to said origin, and
- using said co-ordinate system to provide automatic cross-referencing between said points on said object imaged using said different image gathering ~~methods~~ processes, thereby to provide a co-ordinate reference system which is intrinsic to said mounted object.

Claim 47. (Original) A method according to claim 46, wherein the mount-and-object system has a substantially rectangular outline.

Claim 48. (Currently Amended) A method of imaging a mount-and-object system using an co-ordinate system intrinsic to said mounted object, comprising the steps of:

- identifying a plurality of edge points in said mount and object system using automatic image processing,
- interpolating straight lines between said edge points,

identifying two perpendicular straight lines from said interpolated straight lines,

identifying a meeting point between said perpendicular straight lines,

defining said meeting point as an origin for said intrinsic co-ordinate system,

identifying at least one image feature from a sample within said mounted object,

making a plurality of images at different locations on said mount-and-object system,

finding said at least one feature in said plurality of images and using said feature to increase an accuracy of said internal coordinate system, and

indexing said images based on its respective location expressed in terms of said intrinsic co-ordinate system, thereby to provide correspondence between regions on an object when imaged by different imaging processes.

Claim 49. (Original) A method according to claim 48, wherein the mount-and-object system is substantially rectangular.

Claim 50. (Original) A method according to claim 48, comprising a further step of fine registration between two series of said images of the same mount-and-object system, comprising the steps of identifying an identical feature on each series of images,

placing a cross-hair on said identical feature on each series of said images, and

defining the center of the cross hair as being the same location on each set of images so as to modify the intrinsic co-ordinate system.

Claim 51. (Previously Presented) A data acquisition and display system according to claim 1, wherein said data acquisition device is adapted for gathering data of a microscopic scale biological entity.

Claim 52. (Previously Presented) A data acquisition and display system according to claim 51, wherein said first and second data acquisition processes respectively comprise applying different staining systems to said biological entity.

Claim 53. (Previously Presented) A data acquisition and display system according to claim 51, wherein one of said data acquisition processes uses a bright field data acquisition method.

Claim 54. (Previously Presented) A data acquisition and display system according to claim 52, wherein one of said staining systems is fluorescent staining.

Claim 55. (Previously Presented) A data acquisition and display system according to claim 51, wherein one of said data acquisition processes comprises using reflected light and the other of said data acquisition processes comprises using transmitted light.

Claim 56. (Previously Presented) A data acquisition and display system according to claim 52, wherein one of said data acquisition processes uses ultra-violet illumination.

Claim 57. (Previously Presented) An acquisition and display coordinator according to claim 15, wherein said data acquisition device is adapted for gathering data of a microscopic scale biological entity.

Claim 58. (Previously Presented) An acquisition and display coordinator according to claim 57, wherein said first and second data acquisition processes respectively comprise applying different staining systems to said biological entity.

Claim 59. (Currently Amended) An acquisition and display coordinator according to claim 57, wherein one of said data acquisition ~~methods~~ processes is a bright field data acquisition method.

Claim 60. (Previously Presented) An acquisition and display coordinator according to claim 58, wherein one of said staining systems is fluorescent staining.

Claim 61. (Previously Presented) An acquisition and display coordinator according to claim 57, wherein one of said data acquisition processes comprises using reflected light and the other of said data acquisition processes comprises using transmitted light.

Claim 62. (Previously Presented) An acquisition and display coordinator according to claim 58, wherein one of said data acquisition processes comprises using ultra-violet illumination.

Claim 63. (Currently Amended) The system of claim 1, wherein said changes ~~comprises~~ comprise de-staining an initial stain and re-staining with a different stain.

Claim 64. (Currently Amended) The system of claim 1, wherein said changes ~~comprises~~ comprise removing an initial marker and applying a different marker.

Claim 65. (Previously Presented) The system of claim 1, wherein an initial staining is a contrast-enhancing stain.

Claim 66. (Currently Amended) The system of claim ~~66~~ 1, wherein said second data acquisition process ~~comprises~~ uses ~~using~~ a staining comprising FISH.